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AN
INAUGURAL DISSERTATION
ON
CYNANCHE TRACHEALIS,
OR
CROUP.

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ON
CYNANCHE TRACHEALIS,
OR
CROUP.

SUBMITTED TO THE EXAMINATION OF THE HON. ROBERT SMITH,
PROVOST, AND OF THE REGENTS OF THE UNIVERSITY
OF MARYLAND,

For the Degree of Doctor of Physick:



BY HORATIO CLAGETT,
OF WASHINGTON COUNTY, MARYLAND. MEMBER OF THE BALTIMORE
MEDICAL SOCIETY.



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TO THE MEDICAL PROFESSOURS OF THE UNIVERSITY

OF MARYLAND,

THIS DISSERTATION IS RESPECTFULLY INSCRIBED, AS

A TRIBUTE OF ESTEEM FOR THEIR VIRTUES, AND

ADMIRATION OF THEIR TALENTS, BY

THE AUTHOR.

TO DR. CLAGETT.

DEAR SIR—*I should be insensible both to a sense of duty and the emotions of filial affection, if I permitted this opportunity to pass without expressing my thanks for the assiduity and parental solicitude with which you have conducted me to the completion of my medical education.—Permit me therefore, with the liveliest sensation of gratitude, to subscribe myself.*

Your affectionate son

HORATIO CLAGETT.

INTRODUCTION.



Among the disorders to which the human race are liable, there are few that require the attention of the medical world more than the subject of this dissertation: and, although it be a disease which is not so commonly under the notice of the practitioner, yet, it frequently occurs, and is then so deceitful in its approach, so quick and terrifying in its progress, and so very sudden in its termination, that it sometimes proves fatal before there is any suspicion of its nature or danger: and is usually so far advanced when discovered, as to be beyond the reach of medical assistance.

Of late years, physicians have paid particular attention to this subject, but they differ widely with respect to its nature and treatment.

I have, with diffidence, undertaken this subject, not with an expectation of offering any thing new, or making proselytes to the

opinions that have been advanced respecting it; but rather with a desire of being useful, which I hope will fully compensate for the want of novelty.

Impressed with these sentiments, I have chosen a disease, upon which there are not many accurate observations to be read, and concerning the nature and treatment of which physicians everywhere materially differ. I also hope, that, by giving the generally-received opinion of the physicians in this place, and also the method of cure which is at present adopted by them, it will not be unworthy the perusal of the American reader.

Exclusive of these reasons, a rule of the institution requires a Thesis, on some medical subject, to be written by every candidate for the degree of doctor of medicine, in the University of Maryland.—This will excuse my coming before the publick as an author, and, I hope dispose the candid reader to overlook the many imperfections of this juvenile performance.

DISSERTATION.

Many and very different have been the names assigned to this disease by the different writers who have treated of it, and by the people in general in different parts of the world.—Most of the writers have given it that name which they thought most expressive of their ideas, or that would comprise in it the most characteristick signs of the disease. The most common name for this disease is croup, by which name it is known wheresoever the English language is spoken. It is sometimes called the choak or stuffing, and particularly in Ireland; and in certain parts of this country, it is called by the people hives. It has been called suffocatio by Dr. Home, and Cynanche Trachealis by Dr. Cullen.—Professour Frank calls it Trachealis and Dr. Darwin, from its relation to pleurisy as respects its remote cause, considers it as a pleurisy of the windpipe. Dr. Michaelis, from the idea which he entertains of the disease being a true polypous concretion in the trachea, has given it the name of angina polyposa. Other writers on this subject have described it under other names not more appropriate. We have adopted the name given to it by Dr. Cullen, as being the name most generally used.

DEFINITION OF THE DISEASE.

The Cynanche Trachealis is a disease very difficult to be defined, owing to its attacking so many different parts. It may consist in a difficult respiration and peculiar shrill noise in inspiration, attended with cough, and inflamma-

tion in the windpipe or glottis, with no apparent swelling in the fauces, and in most cases a perfect and natural deglutition is enjoyed by the patient.

PERSONS SUBJECT TO IT.

It has been considered until lately to be entirely confined to children. General Washington died of this disease, and there are cases of this kind repeatedly noticed by different practitioners in this country.—Doctor Potter mentioned ninety cases; out of which number about one-sixth were adults.

Children are sometimes affected with this disease while sucking, but are more liable to it after they are weaned.—Children are subject to this disease from two to twelve years old, but are most subject to it from two to seven years of age.

HISTORY OF THE DISEASE.

It has been generally supposed that this disease was unknown among the ancients; they did not describe it with accuracy.—Dr. Home observes that, “there is little to be learned from inquiry and still less from books.” It is true that before he favoured the world with his most excellent treatise on this disease, and his dissections of those who had died of it, physicians were ignorant of its nature; but that the disease was till then unknown seems very improbable.

Many circumstances, in early times, prevented its discovery. The age of the patients commonly affected by it; from whom little could be learned; the slow and insidious approach of the disease in some instances, from which circumstance the physician was seldom called to visit the patient until it was too late; and, above all, the

great aversion that people had to dissections, which alone could have unfolded the nature of the disease, were insurmountable difficulties. However, of late years parents have been apprized of the danger of neglecting the complaints of children, and have applied to the physician much sooner.

The willingness also to submit to the opening of dead bodies, which shows our progress from the superstitious notions of the ancients to a more enlightened era, have furnished opportunities to the modern physician for obtaining that knowledge of the disease, by dissections, which was so much wanted, and which, it is hoped, will one day put a stop to its dreadful ravages, by establishing a regular and certain method of cure.

In support of the opinion I have advanced, I beg leave to quote two or three passages from the ancients. Hippocrates, in his aphorisms, speaking of the diseases of the throat and fauces, has the following words: “*Ex anginīs gravissime sunt et celerrime interimunt, quæ neque in faucibus neque in cervice quidquam conspicuum faciunt.*”

Galen, in his commentary on the aphorisms of Hippocrates, where he speaks of the asthma as a disease particularly incident to children, has an observation so applicable to the Cynanche Trachealis, that I am induced to believe he must have confounded the two together. His words are: “*Jam vero sit ob angustiam eorum quæ sunt in pulmone ventriculorum. Hæc vero angustia sit, repleto viscera ab iis quæ de superveniunt defluxionibus. Nam et ex utera ad aerem ambientum transitus, et alimenti mutatio eos omnes imbeciles reddit, si ad hæc etiam fluxiones ad pulmonem accesserint, nequaquam sustinere possint.*”

That the Cynanche Trachealis has been frequently confounded with the asthma infantum, will not appear strange, when it is observed that Dr. Miller expressly

says, that the disease described by Dr. Home is exactly like the second stage of the disease, which he calls the spasmodick asthma of children; and therefore it is probable that other writers have fallen into the same error.

Michaelis insists upon it, that no cases of this disease are to be found earlier than the time of Tulpus, who, he says, has described one case of it in a taylor, who threw up, by coughing, pieces of a white thick smooth membrane, as he calls it. This case, however, is so very short and imperfect, that it is impossible to determine upon it with precision. Michaelis dates the first account we have of this disease from the case noted by Tulpus, and then mentions several physicians who have seen and described it, before Dr. Home published his treatise. He particularly notices an Italian physician, Ghisi, who saw the disease prevailing as an epidemick, and described it very accurately. At Upsal, in the year 1764, a graduate, named Wilcke, published a dissertation, in which he gives one or two cases of this disease, but confounds it with the scarlatina. About the same time, a tract on the disease appeared in the *Act. N. Nat. Curios.* by Dr. a Bergen; and in 1765, Dr. Home published his Inquiry.*

I have mentioned the account given by Michaelis, and traced what could be known of it down to Dr. Home, not only to show how erroneously it has been considered as a new disease; but also to show, that from its being known so much earlier than was generally thought, there is reason to suppose that no fixed period can be assigned to its existence, as the causes that now produce it have always existed.

The Croup is generally sporadick, though sometimes it appears in so many persons as to be rather epidemick, as there are more cases of that disease in a given district

* Vide Michaelis.

than any other. It is peculiar to no country. It is often met with in low, wet, and marshy places; and those near the sea and other large bodies of water. Dr. Crawford mentions a very particular fact, respecting a place in which it prevailed so generally, as to be considered an epidemick. He says it was very common in a wide plain, called the Carse of Gowrie, which stretched along the river Tay in Scotland. This plain was soon after dried up, since which time the disease is rarely met with in that place. A moist atmosphere is very productive of the Croup, and more particularly so in countries intersected by many water-courses, especially England and Ireland. But it occurs more frequently in America than any other country, and more particularly in the middle states, from Carolina to Jersey. It is said to be most prevalent in Virginia and Maryland, probably owing to the great and sudden vicissitudes of the climate, and the great number of streams of water with which these states are intersected. All low situations, which are subject to a damp atmosphere, are more productive of this disease, than dry mountainous countries, owing to the debilitating effects of moist air on the system generally, and especially the pulmonary apparatus. It also diminishes insensible perspiration.

It is not, however, confined to these parts of the country exclusively. Doctors Cullen, ~~Mason~~, and Von Rosentien mention its appearing in midland countries, and those far distant from the sea. The Croup very often makes its appearance in this country about the beginning of August, when the evenings become cold, succeeding warm days. It seldom appears in this state in May, June, or July, unless during cold rainy weather, especially when attended with east or north-east winds. It is most prevalent between the first of December and last of March;—the months of February and March

are very productive of this disease. After March it continues to occur with abated frequency, till the return of warm weather. There is a variety of this disease of which I shall have occasion to speak hereafter, that occurs at all seasons, but which is seldom attended with much danger.

It has been maintained by some that the Croup is contagious; but from the causes that produce it we should suppose, that it is no more contagious than catarrh or pneumonia, as it is produced by the same remote cause—cold. Dr. Rosen Von Rosentien is the only writer in whom I have been able to find this opinion, though it has been entertained by some respectable physicians.—Of this, however, he has attempted to produce only a solitary instance; and as he has evidently confounded the disease with the cynanche tonsillaris, we cannot thence deduce its contagious nature; but are compelled to reject his hypothesis, which is entirely destitute of foundation; reasoning either from fact or analogy. There are thousands of instances of children living *eodem hypocausto*, with a child sick in the disease, without being affected by it; and indeed there are seldom two affected in the same family at the same time. But there are some who believe it to be hereditary, and it is evident that children of certain families have a peculiar liability to the croup. Those whose ancestors have been affected with the same disease, or with pulmonary disorders, seem to be often predisposed to this; but there are, independent of these, many robust and fat children who are subject to Croup in its most violent grade. It is remarkable that in other respect such children enjoy the best health. The Croup more frequently comes on suddenly, but it sometimes creeps in the form of a common catarrh, increasing gradually to the most inveterate kind; the child appears languid, droops, and become drowsy and heavy, refuses to

join in any of its usual amusements, and becomes sad and peevish when disturbed. There is pain and tightness about the larynx, and a difficulty of breathing, which sometimes comes on rapidly, seeming to threaten instant suffocation: to prevent this, the shoulders are elevated, and the muscles of the abdomen contracted with great violence, in order to dilate the thorax. In other cases it creeps on so slowly that the child complains of some difficulty of breathing for several days before he is seriously ill

1st. The voice is hoarse, and there is a peculiar diagnostic sound in coughing, owing to the vibrations the air undergoes in its passage from the lungs. It has been compared to a noise issuing from a brazen tube, and emits a chorded echo, which is owing to the inflammation in the muscles of the trachea and glottis.

2dly. A sharp shrill sound similar to the barking of a dog or fox, owing to a diminution in the diameter of the trachea and glottis.

3dly. A sound similar to the crowing of a young cock, which is caused by the almost entire closure of the glottis, brought on by inflammation. It is difficult to describe, but is easily known by a person who has once heard it. Sometimes this noise attends each inspiration; at other times, it is only perceived when the child cries, coughs or speaks.

The symptoms of Croup are sometimes constant, but they more generally remit, particularly during the day. There is generally no apparent tumour in the throat, and deglutition but little affected. The bowels are generally slow in this disease, and the pulse sometimes small, hard and concentrated. The above symptoms are a true indication of a fatal termination of the disease, unless powerful remedies are used immediately, as copious venæsection, emeticks, catharticks, and blisters.

REMOTE CAUSE.

Little need be said of the remote cause of the Croup. From what has already been delivered on the history of the disease, it appears that its remote cause is cold, attended with moisture. This is evident from its appearing more frequently in winter and spring than at other seasons, and in low damp situations much more frequently than in high dry places. Although a predisposing weakness of the parts affected, either natural or acquired, may render a patient more sensible to the operation of cold, this last is generally, if not always the principal agent, either by debilitating the parts directly, or of suppressing the insensible perspiration, and thus occasioning a determination to a weak part. This position may be strengthened by the fact, that the *Cynanche Trachealis* prevails in common with other inflammatory diseases, such as pulmonary catarrh, and the other species of *Cynanche*, to which it is nearly related.

There are various opinions as to the nature of this disease; some suppose that it is spasmodick, and others that it is truly an inflammatory disease. While physicians were unacquainted with the appearances on dissection, they had no idea of what was going forward in the trachea; nor could they form a just idea of the disease. But when Dr. Home favoured the world with his very valuable dissections, the nature of the disease was evident, and its cause clearly discovered.

By the information we have derived from dissections, and from the history of the disease and its causes, as treated of above, we shall endeavour to prove that it is truly an inflammatory disease, which it is presumed will be perfectly satisfactory.

The external appearance of the body resembles that of persons who have died of suffocation. The face is swelled and livid, the eyes are prominent, and turgid with blood, the veins of the neck are swelled. On laying open the trachea, we discover signs of inflammation, and a quantity of tough white mucus: the inflammation in the trachea can be accounted for in the same way as inflammation in general; the diminution of temperature produces debility in the vessels of the trachea and glottis; the impetus of blood thrown into those debilitated vessels, causes them to become engorged with blood, which produces increase of heat, pain, and redness in the part. Dr. Baillie, in his *Morbid Anatomy*, has proved very satisfactorily, that this is an inflammatory disease. On dissections he found, that the inflammation was not wholly confined to the trachea, but extended to the bronchia and muscles of the glottis.

Dr. Chayne, after him, has likewise proved that it is an inflammatory disease. On dissections he likewise found inflammation in the trachea and glottis.

Dr. Rush mentions a case in his little tract, in which adhesions had been formed between the lungs and p^{eu}ra, from the inflammation having proceeded downwards from the trachea to the lungs.

Dr. Potter related five or six cases of dissections, which all proved the inflammatory nature of this disease, particularly one, in which not only the muscles were inflamed, but the trachea and both bronchia were completely filled with excreted mucus. In this case the semi-membranous body was taken out entire, exactly of the length and shape of the trachea and its bifurcation. We would naturally conclude from the causes that produce it, and the appearances on dissection, that it is truly an inflammatory disease, as much so, as catarrh or pneumonia.

DIAGNOSIS.

Some physicians are of opinion, that it is unconnected with any other disease; this is certainly not true: the affection of the trachea is a symptom of many inflammatory diseases, as pneumonia, catarrh, &c. The inflammation in this disease has often extended to the trachea, and put on the symptoms of Croup. The case that Dr. Rush dissected, and found adhesions between the pleura, were, I have no doubt, in the first instance, a pleurisy, and the affection of the trachea was only a secondary thing, which is not unfrequently the case in pneumonia. Dr. Rush did not see this case in the first instance. There are some cases of patients dying with suffocation in pneumonia, after the affection of the lungs had been entirely subdued; the trachea having been affected apparently in proportion to the abatement of the primary affection.

There is no disease with which the Croup has been so frequently confounded as asthma, and when children are the subjects, there is at first view a strong similarity. If we consult the pathology of the two diseases, I think a clear and satisfactory diagnosis may be made. If we adopt the opinion that asthma is a spasmodick constriction of the trachea, the distinction may not be so easy, as the Cynanche Trachealis, in many cases, seizes those parts. To this opinion we do not subscribe, for the asthma continues to affect the lungs almost entirely, if not altogether; the asthma is rather a disease of adults than children; is a more chronick affection, and the secretion which is brought up, is evidently from the lungs, approaching very often in appearance to a puriform excretion. The duration of the paroxysm, and its termination in health without the assistance of medicine, is sufficient reasons for considering the diseases as different; for the

Croup seldom ends in health, when violent, without the assistance of art.

External bodies falling into the trachea have produced symptoms exactly similar to those of this disease. If the pain changes its situation in coughing, it will assist in forming a diagnosis. We should inquire too, whether the child has been in a situation to get any thing into its trachea that might stick there, and give the symptoms peculiar to this disease.

A water-melon seed produced the same symptoms precisely; as cough, difficult respiration, wheezing, a flushing of the cheeks, and finally, convulsions, in a fit of which the child expired.

The Croup has accompanied, as well as succeeded, catarrh, small pox, measles, scarlet fever, and aphthous sore throat. In Dr. Fulke, it succeeded acute rheumatism.*

PROPHYLAXIS.

The prophylaxis of Croup seems to have been very little attended to. It would seem probable that there are means in our power which will generally succeed in preventing a return of the disease, provided they be judiciously used.

The temperature of the body is one of the first steps to this desirable end. For this purpose flannel should be worn next the skin, and should be continued till the growth of the child, or other causes shall have removed the predisposition. Exercise on horseback is one of the best prophylactics, when taken in the open air. There have been some instances of children being salivated, either accidentally, or for the cure of other diseases, and although they had the disease frequently before, it was suspended for some time.

* Vide Rush.

THE CURE.

There are various opinions as to the mode of cure ; some use emeticks, some catharticks, some venæsection to the usual quantity, some blisters, and others the infusion of seneka. I shall endeavour to prove that they are all useful under certain circumstances and in certain states of the system, and that none of them are to be relied on to the exclusion of the rest.

There is a variety of this disease to which I alluded in the former part of this dissertation, which readily yields to emeticks and moderate doses of calomel, combined with a few grains of seneka root and blisters.

The pulse is not the criterion in every instance of this disease ; and it is not always practicable to discriminate from appearances, between the variety, and that which is particularly the subject of the present dissertation ; the former ~~the~~ most commonly attacks in the night while sleeping, and without premonitory cough, the voice neither hoarse nor shrill. But as this is the case in some instances with both varieties, the best method is, in doubtful cases, to commence with the usual remedies, and if, after the operation of an emetick, the distress of breathing, clangous cough, pulse full and concentrated, and appearances of suffocation from the high degree of inflammation in the wind-pipe, glottis and muscles, should be evident, I would use ~~the~~ the lancet, *ad deliquium*. It has sometimes happened with infants, that no vein of sufficient magnitude could be discovered in the arm, and in these instances I would recommend the external jugular vein or the temporal artery to be opened, which I believe can be accomplished without difficulty. Bleeding, *ad deliquium*, some may suppose, is carrying the lancet too far ; I am not the author of this practice,—Doctor

Bailie of New York, and Dr Dick of Alexandria, have both used the lancet, until this state was produced, with the happiest success. Unless bleeding be carried to the extent as above directed in certain cases, the remedy is unquestionably of no avail.

The cases in which the lancet has failed, are those where either the second paroxysm was suffered to proceed during the night, or where the first, having undergone little or no remission in the morning, was suffered to proceed without interruption to the beginning of the second night. The inefficacy of the remedy in those states of the disease is very obvious, and the use of the lancet under those circumstances, in some instances, is highly injurious. From all the observations I have made, as to the inflammatory nature of this disease, I am disposed to believe, that the point at which bleeding ceases to be a remedy, cannot be marked with any degree of precision, independent of considerations relating to the time and manner of its commencement. Yet I have no doubt that an attention to the foregoing remarks, with a slight share of experience, will enable every judicious practitioner to decide, without difficulty, in every case that may come under his notice, and fortunately, where Croup most prevails, he will seldom be brought to the necessity of hesitating on this ground; for the disease is so alarming, and the Croup so characteristick, that fatal delays in application to the physician will rarely happen.

Powerful as the lancet is in this disease, its violence requires that it should be aided by

VOMITS.

These should be given frequently, and large quantities are required to produce full vomiting. The diminution in the diameter of the trachea, produced by the contrac-

tions of the muscles, and the quantity of mucous and fibrous substance in the canal, prevents the inhaling of a sufficient quantity of oxygen, the excitability being thereby diminished, the action of emeticks is less prompt and effectual. The tartarized antimony, given at short intervals, is a very certain and powerful emetick. Dr. Potter recommends, in cases where the ordinary emeticks will not operate, the hyper-oxygenated muriate of mercury, one grain to an ounce of water, and one tea-spoonful to be given every half hour to a child of two years old, and more or less according to the age of the patient or the state of the disease, and has succeeded by this medicine, after the other emeticks had failed. It sometimes produces salivation, which aids very much in the cure of the Croup.—The good effects of emeticks are much more obvious in diseases of the trachea, than of the lungs. Emeticks are forbidden when there is high inflammation in the lungs. Dr. Rush's case of dissection, where there were adhesions between the plura, proves incontestibly the inefficacy of emeticks in certain cases. The exhibition of emeticks are of great service to dislodge the accumulated mucus in the trachea and bronchial ramifications, for they often produce a speedy and copious perspiration.

CATHARTICKS.

These should consist of calomel, and should always follow the use of emeticks, if they fail of opening the bowels. Calomel is the most effectual cathartick in the Croup. It determines to the surface, and very seldom salivates, owing to the difficulty of salivating children, and being given in such large quantities as to pass rapidly through the bowels. The good effects of calomel in all affections of the trachea is obvious; it increases the secretion, and determines to the surface. It likewise keeps the

bowels open, which are generally costive in the Croup, and which is accounted for by Dr. Davidge in the following manner :—The inflammation and contraction of the muscles of the glottis, produces a narrowness, and thereby prevents the usual quantity of oxygen from being inhaled, as the stimulus of life is diminished, so in the same ratio is the diminution of the nervous power, and the loss of ~~tone~~ ^{sensibility} in the nerves of the stomach, produces constipation. The next remedy is the

POLYGALA SENEKA,

So celebrated by Dr. Archer of Maryland, as to be thought almost a specifick. I cannot agree with this respectable authority on this point; the stimulating effect renders it inadmissible in the inflammatory stage. It may be useful as an auxiliary to other remedies, after depletion shall have considerably subdued the inflammatory action, and is likewise useful where there is a large secretion from the trachea and bronchia, attended with little inflammation. It is an improper remedy when the muscles are affected with inflammation; it may be useful in some cases by its emetick quality. Dr. Archer recommends the following formula:—R. rad. senek. in pulv. crass. ℥ss. coque in aqua fontan., eight ounces ad four ounces. Of this a tea-spoonful is to be given every half hour or hour, as the urgency of the case may require: and at intervals a few drops to keep up the stimulus, until it either acts as an emetick or cathartick.

THE EXPRESSED JUICE OF ONIONS.

This remedy has been recommended after depletion, and Dr. Potter is of opinion, that a decoction of it is equal in virtue to the seneka.

2 PEDILUVIUM AND GENERAL WARM BATH

This remedy has been too often indiscriminately used, without regard to the state of the system, which is highly injurious in some instances. The proper time to use these remedies, is after depletion; they then produce perspiration, and enable emetics to act more speedily, and produce general relaxation.

BLISTERS.

They are useful after depletion, by translating excitement, and by their local depletion, they stimulate the debilitated vessels, and cause them to contract and throw out their contents, and thereby enable the circulation to go on more freely. They are to be applied as near to the part affected as possible; they likewise may be applied to the breast, and even to the extremities, if they fail when applied more immediately in the neighbourhood of the part affected.

WARM AQUEOUS VAPOURS,

When frequently received into the trachea, constitute a remedy of some consequence in this disease. Vinegar added to warm water, is employed for this purpose; it acts as a stimulus to the bronchial vessels, and increases the secretions from them: it likewise lessens the cough, promotes expectoration, and relieves the dyspnoea. The method of using or applying the vapour is of very little importance; a basin filled with hot water and vinegar, and the face placed over it, or the steam received through an inverted funnel, will answer as well and perhaps better, than Mudge's inhaler.

DIAPHORETICKS

Are useful, as they determine the fluids from the internal parts to the surfaces, though emeticks and the other means employed generally, produce this effect ; such as act merely as a diaphoretick, cannot be depended upon.

The last remedy I shall mention, is

BRONCHOTOMY.

When none of the remedies we have been considering prove successful, and when the symptoms, particularly that peculiar affection of the breathing, which is chiefly dreaded, increase, and symptoms of suffocation come on, the only chance of relief which remains to the patient, is bronchotomy, by making an opening from the anterior part of the neck into the trachea, between the thyroid and cricoid cartilages. This operation is less formidable than it appears, and if carefully performed, is generally safe. Dr. Home was the first who used this remedy as the last resource ; Michaelis recommended it in all cases where the symptoms do not yield readily to other means.

The novelty, however, of this remedy, and the popular notions of its barbarity, are almost insurmountable impediments to its execution: there are many other objections to this remedy. It is improper when the inflammation extends down the trachea to the lungs, bronchia, &c. It renders emeticks inadmissible; and if the cause of suffocation exist below the puncture, into the trachea, it is ineffectual. It may be useful when the cause of suffocation exists above the puncture, and when the muscles are constricted.

THE PROGNOSIS.

Death takes place when the symptoms are violent, and do not remit, in three or four days, and frequently in twenty-four hours, or even less; but we sometimes see it protracted in a chronick and feeble form, for eight and ten days. When the patient labours under a constant and audible stertorous breathing, the prognosis is unfavourable. The danger is less when a dry stertorous cough attends with easy respiration in its intervals. The danger is nearly over when the cough, though stertorous, is loose, and accompanied with a discharge of mucus from the trachea. In the more lingering cases, the symptoms gradually increase, and many of those which preecede death in other febrile diseases, supervene, the mouth becomes very foul, the respiration more hurried, small, and difficult: restlessness and dejection increase, and under these circumstances, that species of delirium which is most allied to coma, sometimes supervenes, the patient seeming stupid, and frequently muttering to himself, with marks of great impatience; the pulse is often quick, tremulous and irregular; at length it can hardly be felt, the extremities become cold, and the patient soon expires. Death sometimes approaches in a different way; profuse sweats and fainting-fits preecede the coldness of the extremities, the eyes appear glazed, the lips, tongue, mouth parched, and the patient falls into general convulsions, which prove the immediate forerunner of death. Tumours behind the ears, which run speedily to mortification, are said to be unfavourable by Dr. Mollys. The ceasing of the cough is be ranked among the fatal symptoms, as we might, a priori, have supposed, since its absence can only be attributed to increasing sensibility, and robs the patient of one chance of life, by depriving him

of the power of removing the matter which colgs the trachea, and often occasions suffocation.

Suffocation takes place at all periods of the disease, and when the patient dies on the first or second day, it is frequently from this cause : a spontaneous flow of sweat, which sometimes lasts for several days, spontaneous vomiting, and diarrhœa are all favourable.

Dr. Bard says, salivation is sometimes critical; a copious sediment from the urine is favourable. Dr. Rush observes that he has frequently seen an eruption of little red blotches in the Croup, which generally brought relief. If the pulse become fuller, more steady, and less frequent, the breathing freer and less hurried, the peculiar sound of the voice and cough begin to wear off, and the patient appears less anxious and oppressed, the prognosis is favourable.

